SUPPLEMENTAL MATERIALS

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Attribution of extreme precipitation with updated observations and CMIP6 simulations

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Figure S1. Geographical boundaries for the 6 continental regions based on Jones (2013). These regions include Asia (ASI), Europe (EUR), North America (NAM), South America (SAM), Australia (AUS) and Africa (AFR).
Figure S2. Data coverage for R99p from the Sun et al. 2020’s data and HadEX3 during 1951-2014. The red grid boxes are the grid cells with at least 70% of data available during 1951–2014. Note that HadEX3 dataset is spatially interpolated dataset at 1.875° x 1.25° resolution.
Figure S3. Data coverage for R99p from the Sun et al. 2020’s data in 2015, 2016, 2017 and 2018. The red regions are the grid cells with at least 70% of data available during 1951–2014.
Figure S4. Time series of 5-yr mean anomalies (relative to the 1961–90 average) for R99p, R95p, R99pTOT and R95pTOT from the HadEX3 dataset (red lines) and the Sun et al. 2020’s dataset (blue lines) during 1951-2018 in globe and 6 continental regions. The upper to the lower panel show the results for globe (GLB), Asia (ASI), Europe (EUR), North America (NAM), South America (SAM), Australia (AUS) and Africa (AFR), respectively.
Figure S5. Same as Fig. 4, but for the results based on the 3.75°x 2.5° grid boxes.
Figure S6. Same as Fig. 5, but for the results based on the 3.75° x 2.5° grid boxes.
Figure S7. Same as Fig. 6, but for the results based on the 3.75°x 2.5° grid boxes.
Figure S8. Observed and model simulated extreme precipitation indices during 1971–2000. The observed data is based on Sun et al. (2020) ’s data sets and the model results are from the historical simulations of 7 climate models participated in CMIP6.
Figure S9. The Taylor diagrams for extreme precipitation indices during the period of 1951–2014 (top left) R99p; (top right) R95p; (bottom left) R99pTOT and (bottom right) R95pTOT. The similarity between CMIP6 historical simulations and observation is quantified in terms of their spatial pattern correlation, the root-mean-square difference (RMSD), and their variations (represented by normalized standard deviations). The radial distance from the origin (zero) is proportional to the normalized standard deviation. RMSD between the simulated and the observed patterns is proportional to the distance from the reference point (REF), which is equal to one. The numbers 1 to 8 represents the for the CMIP6 models and their ensemble mean, while the colored dot represents the values in global and three continental regions.